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CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

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FIG. 71. Undescribed Cereus discovered by Harry Johnson in Peru (see pg. 135).

CACTUS AND SUCCULENT JOURNAL

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Officers and Board Members Nominated for 1953

Harry Johnson, Jr., *President*
Mace Taylor, *Vice-President*
Ethel Rush, *Secretary*
George Glade, *Treasurer*
BOARD:
Dr. E. Yale Dawson
Nickolas Bokarica
W. Sherwood Bell

Additional nominations may be made from the floor at the annual meeting to be held at 2 p.m. at the home of the Rush's, 820 W. 115th Street, Los Angeles, September 14. Basket lunch.

Correspondence Wanted

A. R. Sandbach, 20 High Street, Norton, Stokes-on-Trent, England, would like to contact other members. He has a collection of 1200 species and is especially interested in Mams.

NEW YORK COLLECTORS

Prof. Fred H. Tone, Russel Sage College, Troy, N. Y., would like to communicate with other collectors in his vicinity. Here is a chance for cactophiles to get together.

FIG. 72. An interesting study of *Echinopsis turbinata* seedling photographed by Donald Ralston, Albany, Oregon.

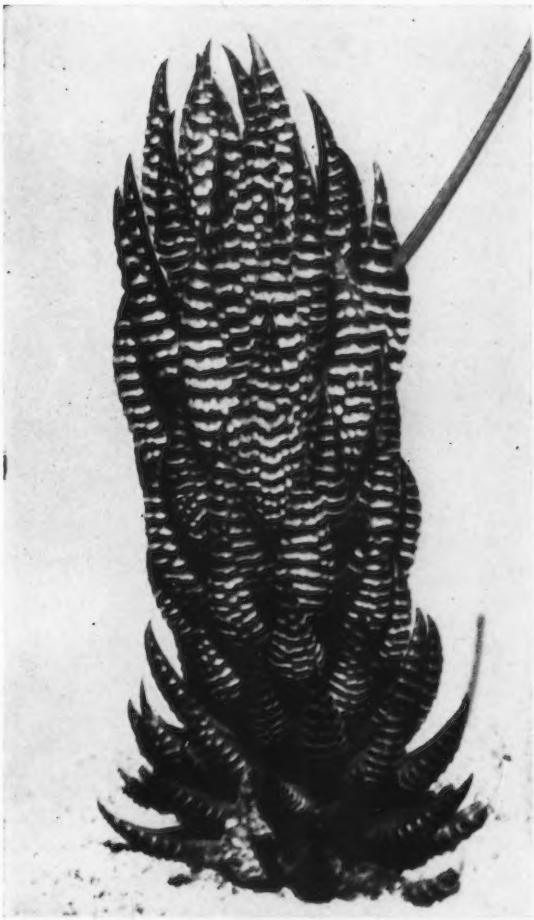


FIG. 73. *Haworthia Reinwardtii* var. *zebrina* G. G. Smith nat. size.

NOTES ON HAWORTHIAS

By J. R. BROWN

Haworthia Reinwardtii var. zebrina G. G. Smith in Journ. So. Afr. Bot. X(1944)18 fig. 5 and Pl. 11.

Plant with leafy stems to 14 cm. tall, to 5.5 cm. diam., proliferous from the base.

Leaves ascending, incurving, lanceolate, acuminate, about 5 cm. long and 12 mm. broad towards the base; face of leaves rounded and with a lightly raised, concolorous, mediam line, green and with a few small, roundish, white to concolorous tubercles in the upper part; back of leaves rounded and keeled near the tips, dark green and with 12 to 15 rows of very white, round to oblong tubercles, most of which are coalescent in very prominent transverse bands, the tubercles becoming smaller and less united towards the base.

Locality: Cape Province; Peddie Distr.

Named for the distinctive zebra-like markings on the back of the leaves.

This is a beautiful form of *Haworthia Reinwardtii* and is probably the most striking of all its forms so far described.

The photograph is of a plant growing in the collection of J. W. Dodson.

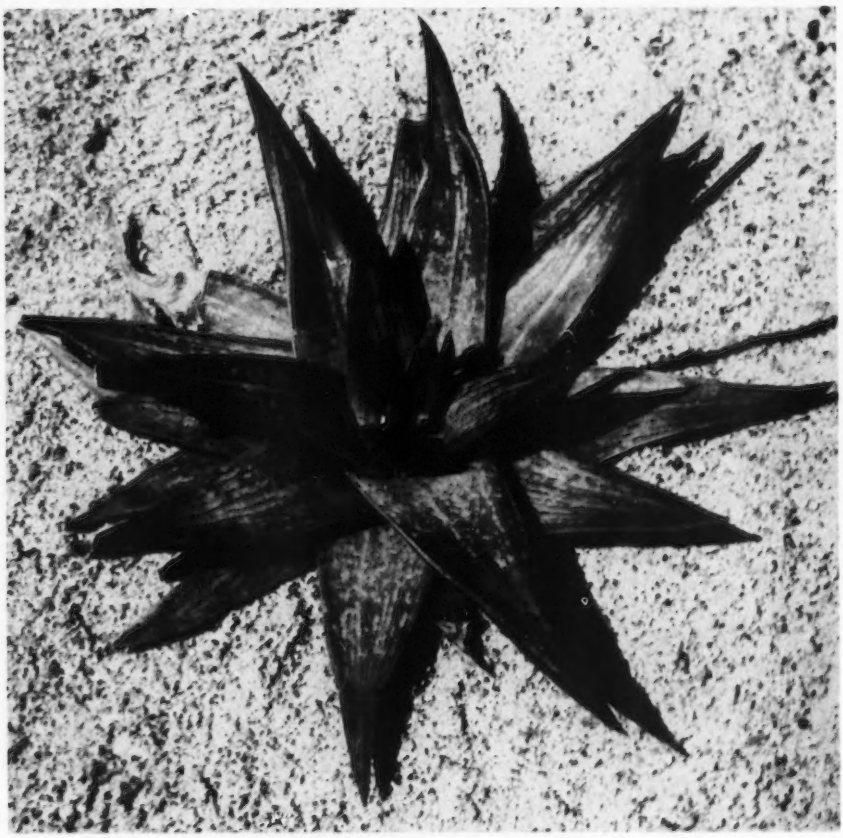


FIG. 74. *Haworthia Zantneriana* Poelln. nat. size, showing the face of the leaves.

Haworthia Zantneriana Poelln. in Repert. Sp. Nov. XLI(1937)217, in Cact. Journ. VI (1937)37, in Desert Plt. Life. IX(1937)90, fig. 1, in Repert. Sp. Nov. XLIV(1938)228.

Plant stemless, to 12 cm. in diam. and proliferous from the base.

Leaves ovate-lanceolate, smooth, erect-spreading, the older leaves often lightly recurved in the upper part, 5-7 cm. long, to 20 mm. broad towards the base, greyish-green in color and marked with numerous, irregular, whitish, subpellucid spots, streaks or lines arranged in a more or less lengthwise manner; face of leaves somewhat concave in the lower part and thickened towards the tips; back of leaves convex and keeled; the margins and keels smooth and with a whitish, subpellucid band.

Locality: Cape Province: Eastern Karroo, about 15 miles south of Klipplaat at the northern entrance to Kamperpoort, Groot River Heights.

Named in honor of Alfred Zantner of Ingolstadt, Germany.

The leaves of this Haworthia, which is placed in the sect. Loratae, are much broader than is indicated by Dr. von Poellnitz in his description, where he gave the breadth as 6-8 mm. The broader leaves giving a much sturdier appearance to the plant than would be expected.

My sincere thanks are given to Mr. J. W. Dodson in whose very fine collection of Haworthias the plant shown in the photographs is growing and who was most courteous in allowing his plants to be handled and photographed.

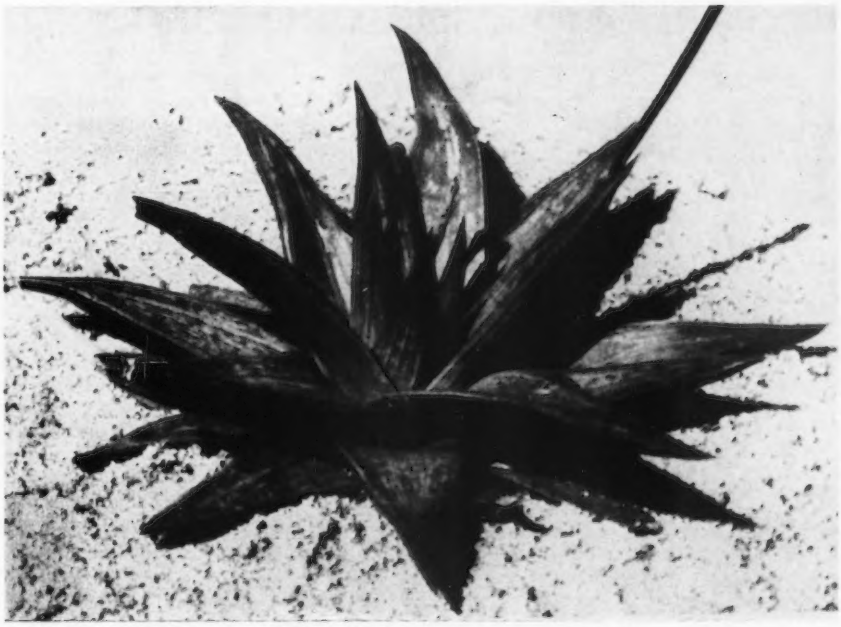


FIG. 75. *Haworthia Zantneriana* Poelln. nat size.

Haworthia Broteriana Resende in Bol. Soc. Brot. XV(1941)159, in Mem. Soc. Brot. II (1943) 72 figs. 4a, 17b, 28c, 29e. *Haworthia Sampaiana* forma *Broteriana* (Resende) Resende & Pinto-Lopes in Port. Acta Biol. II (1946) 176.

Plant with leafy stems 10-15 cm. tall, 6-8 cm. in diam., proliferous from the base.

Leaves 4-6 cm. long, to 2.5 cm. broad towards the base, ovate-lanceolate, acute, erect-spreading, green, somewhat shining, becoming dull green with age; face of leaves smooth or with some tubercles near the thickened margins, convex, especially the younger leaves; back of leaves rounded, keeled in the upper part and ending in a short, pellucid point which soon becomes brown, with shining, concolorous tubercles often more or less confluent in irregular transverse rows; the margins in the upper part with somewhat conical concolorous tubercles.

Locality: Unknown.

Named in honor of the Portuguese botanist, Brotero.

I have retained the name *Haw. Broteriana* at this time, as it seems to differ markedly in some characters from *Haw. Sampaiana.*

Haw. Resendeana Poelln., *Haw. Broteriana* Resende, and *Haw. Revendettii* Uitewaal would seem to form a distinct series in the sect. *Coarctatae.*

This is a plant which does not seem to be very happy with me when growing out of doors, the leaf tips soon becoming withered and the plants assume a ragged appearance, and so I take the opportunity to show a fine plant of this Haworthia grown by J. W. Dodson and which was sent to him by the courtesy of Dr. Flavio Resende of Lisbon.

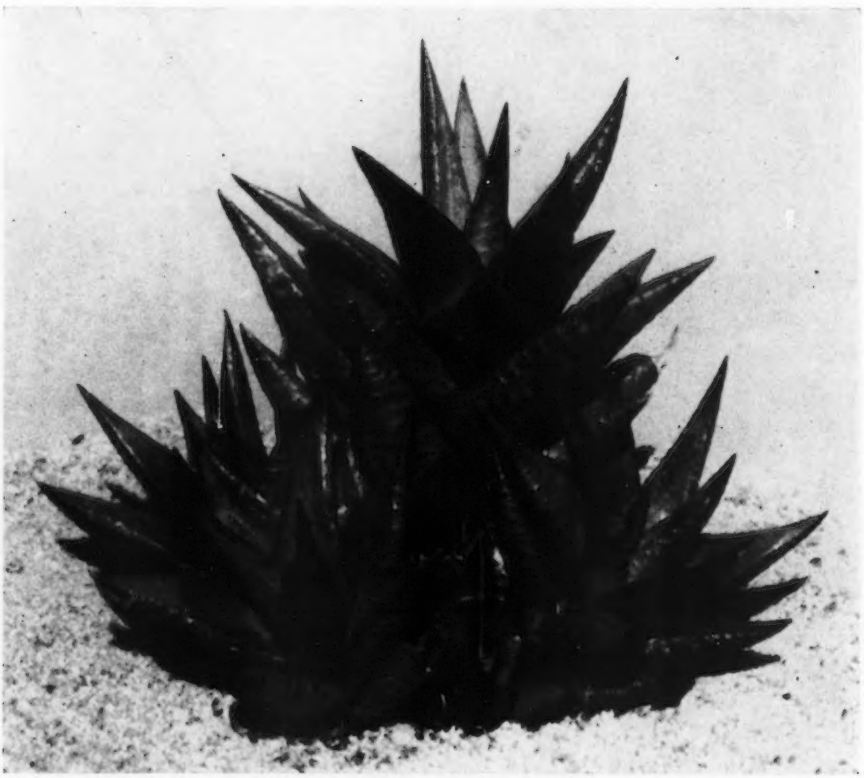


FIG. 76. *Haworthia Broteriana* Resende nat. size.

FROM ALASKA

Dear Mr. Haselton,

In answering my inquiry about your magazine you asked how we grew our cacti in Alaska and if they ever flowered. I waited until spring to see if we would have better luck than before.

We use the potting mixture suggested in your book for the amateur, and follow the directions as nearly as possible given there or in Mr. Johnson's catalogue. All of our cacti have come from the latter's garden as seedlings, and we are very satisfied with them. We are only gradually learning what we are doing wrong, and why certain species always die, for example the *Pleiospilos simulans*—they die every October.

My greatest trouble is lack of sunlight in my south windows during the summer when the sun is in the North (and no North windows) so that so many of my cacti become elongated.

So far we have had blossoms on these: *Aloe Variegata,* which is in bloom now and bloomed last year in July; *Faucaria tigrina,* which bloomed the last two years; *Stapelia variegata,* which usually aborts; *Crassula hemisphaerica; Haworthia subfasciata;* one of my friends had a *Parodia aureispina* bloom; and this year another friend has one in bloom that as nearly as we can decide must be a Chin, (or is that the Gymnocalycium?) but it has a light green flower. Of course, there are many *Zygocactus truncatus* in town which bloom beautifully, and so far I have seen two Epiphyllums in bloom (variety unknown) and I have one with three bud shoots so I am hoping.

The above is probably very uninformative, but you may laugh at this—for it is truly branded "Amateur": I sent for a Cactus Catalogue and bought some Cacti because I could not even raise a Geranium. I thought that they at least could give me something green and growing around the house, for I thought it was impossible to kill them. What a shock. Now I know better, and even buy books about them. One year I tried giving a few ultra violet treatments to see if they would bloom: they all died. But last year in a desperate effort to save two of my favorites I operated and cut away places which had started to rot. The two are alive and healthy today, though somewhat misshapen.

Thank you for listening to me, it has been fun. Maybe I should join one of the Robins! (Yes.)

MRS. ELSIE WHITMAN, Seward, Alaska.

EDITOR'S NOTE: Letters like this are very interesting and we ask other members to make suggestions that might help those who are struggling under handicaps.

A CACTUS COLLECTOR IN THE ANDES

An account of a second expedition to the west coast of South America.

By HARRY JOHNSON

PART IV

COVER PHOTO: *A handsome new, almost spineless Cereus growing 15-20 ft. in height branching from a short, spiny trunk. I was able to climb up them to secure flowering branchlets. It is a night-bloomer with short, tubular, white flowers the tube and ovary with curious, naked, scarious scales. I found it on both sides of the Maranon at 500 to 900 meters. The fruits, though unripe, were quickly eaten by the green parakeets.*

Before reaching the hamlet of Tembladera, *Neoraimondia* appeared, also *Haageocereus* and *Armatocereus*. A large handsome *Pseudoespostoa* grew sparingly but as we neared Chilete at a much higher elevation the mountain slopes on every side were thickly forested with millions of the white columns of yet another species. This new species is most interesting with stems rather slender, less hair and more long spines and smaller, light brown pseudocephalia. I had noticed many plants by the road with the wool missing as though hacked off. The mystery was solved when inquiries brought out the fact that the wool was harvested and used for cushion and bolster stuffing; the seat in a truck, where the stuffing was showing, proved to be of this silky wool material. The slopes were thickly sprinkled with the red caps of Melocacti. Near Chilete, on the canyon floor, I found a most interesting *Monvillea*. At first I thought it was the same new species I had found in 1948 near Chiclayo but it appears to be quite distinct. The plants, when supported by the trees growing on the lower slopes, reached twenty feet in height, densely armed with chalk-white spines. With it grew a very lovely *Cereus*, probably *Haageocereus*, with very short radial spines of a rich golden color. No centrals were present. The plants were rather slender, the thickest hardly an inch and a half in diameter with low, rounded ribs which were not visible. It grew to four feet tall, upright but inclined to sprawl. I found only one colony growing in the shade of trees. This is not a normal location for *Haageocereus* though I have found what appears to be *Haageocereus pacalaensis* growing in rather open xerophytic forest in the valley of the Rio Sana

FIG. 77. A native village on the banks of the Rio Maranon. This is the fabled upper Amazon. Strangely enough to the traveller who thinks of the impenetrable jungle associated with the Amazon, its upper third passing through Peru is, in its lower reaches, bounded by a decidedly xerophytic forest of low trees or barren mountains. It was a thrill to cross its muddy waters by cayuca and examine the bluffs on the opposite bank. Just below here the river turns eastward and breaks through the mountain barrier in two series of falls and rapids called Pongos and becomes the middle Amazon above Iquitos.

south-east of Chiclayo at about 4,000 feet elevation.

A fine *Borzicactus* grew on the benches, the stout stems less than three feet tall, dark green with low, rounded ribs, areoles proximate, felted with short bristle-like radial spines and, on the specimens I saw, no centrals. The short flowers were tubular, the perianth somewhat zygomorphic and hardly expanded, in color a lovely lilac-pink. It is probably *Cereus plagiostoma* of Vaupel. It also was not common. On the slopes grew another *Armatocereus* quite like many others found at similar elevations.

Before reaching Chilete, the valley, where side canyons entered, widened out and there were some plantations and orchards. At this season they were a lovely deep green, the mango trees loaded down with their pendent racemes of oblique fruits now just flushed with yellow and red. This is the home of the Cherimoya (*Anona*) though it was too early for its green, heart-shaped fruits which are filled with white custard-like pulp. Such valleys are idyllic spots for here it is never unpleasantly warm and never is cold. We of temperate lands know but a few times each year the luxury of such perfection. A plantsman could grow a terrific range of material here though actually one is appalled at the lack of variety. Though the Spanish really enjoy gardens and hardly a house but has its cans of Geraniums or Begonias or even, strangely, Mesembrianthemums, they seldom pioneer in introduction of exotics.

Above Chilete we entered an extremely dry region which was covered with very low, scanty, xerophitic shrubs. They showed acutely the very long drought. The leaves of the common Croton were dry and few, the Jatrophas, though showing their red cymes, were leafless and the other bushes were as nude as a winter's landscape. However, here and there a pretty Stenomesson showed brightly red and Dr. Vargas eagerly collected them for they appeared to be new. The small bulbs were quite near the surface and seemed to have made a final effort in producing their flowers for they were hardly more than bags of concentric, papery scales. I had been attracted up the slope by a gorgeous crimson blossom which turned out to be an Ipomoea. It was a slender, fragile vine from a woody rootstalk the blossoms as delicate as an orchid. Often the most dainty blossoms are produced in weird environments. There were no more cacti to be seen.

Above us the switch-backs leading to the pass were lost in hovering clouds. As we slowly made our way upward in second and third gear I had little time for observations. Always one must be

FIG. 78. *Thrixanthocereus Blossfeldiorum* at home in the valley of the Rio Huancabamba above its junction with the upper Amazon River or Rio Maranon, altitude 900 meters. This handsome and curious cactus in the past was known only from scattered specimens from higher up the river. Here below Pucura it occurs in tens of thousands and may reach 15 ft. tall. A distinctive feature is its gray, bristly pseudocephalium which may reach 10 ft. in length.

on the lookout above for the stray trucks which come dashing at full speed down the road and around the blind hairpin curves at the end of each zig or zag and always on the inside. If one should be unfortunate enough to meet one at the turns the trip would end suddenly. We crossed the pass at 3200 meters. This is 1000 meters less than the Paso de Callan. The pass north of Chiclayo is 2200 meters thus one sees that the Andes become progressively lower up to the Ecuadorean border where they again ascend till glorious Chimborazo is reached. Before reaching the top, we passed through the hamlet of Magdalena and on the other side San Juan. These are hardly more than marks on a map. Finally in the dusk we reached Cajamarca.

This town is a very ancient one. When the Spanish Conquistadores arrived sometime near 1512 it was a capital of the Inca empire. It probably was an ancient city when the Inca armies stormed its mud walls. We are perhaps prone to forget the venerable history of many of the cities of our southern neighbors. Today it is the center of a large agricultural population. The central square is large but not elaborate and the street around it is paved. We stopped at the small Hotel Tourista but there were no rooms so after a search we found the Hotel Los Andes. The cobbled streets were rather steep and down the center of each was a deep drain. I finally maneuvered the car to where we could unload at our room which opened on the street and we unpacked. By our standards the room was rather bare. Two rope beds, two chairs and a small 10-watt electric light on a stand were the furnishings though we boasted our own washroom facilities.

In almost all the towns of small size that have a number of stores there is a small restaurant other than the native stalls. These cater to the merchants, bachelors, drummers and occasional travellers. They are difficult to locate as they are seldom on the street or have signs. The hotel had one upstairs and about 8:00 p.m. we ascended and were served an ample meal. The next day we devoted to getting tires repaired, trying to locate some tubes and kodachrome film and a few small purchases. There were no tubes or film. We had to wait until 11:00 a.m. before these shops opened. In the afternoon we inquired about the room where Atahualpa met his fate and found it now was a part of the Catholic hospital. Atahualpa, the Inca king, had gone to Cajamarca and Pizarro caught up with him here. As ransom he demanded that enough gold be collected from the people to fill a room. We measured the room which was 6 meters wide, 10 meters long and filled to just where I could reach with the tips of my fingers. After getting the ransom he had Atahualpa strangled. Later we went to the famed Inca Baths, a few blocks out of town. The springs were boiling hot and reminded me much of some at Yellowstone Park. The reputed king's bathtub is still there though I am a confirmed skeptic. The place is very popular for much credence is given to the benefits derived from mineral baths. A bathhouse with private rooms for bathers does a lively business.

* * *

VERMICULITE—"Mineral Popcorn"

We of the cactus hobby are all familiar with VERMICULITE for germinating seeds and rooting cuttings. I thought you might be interested in a little information on how it "got that way" and other uses for it, which I ran across in a metal trade magazine.

Vermiculite is a light, metallic-appearing, granular, hydrous silicate of the mica family that surged into commercial importance during World War II. It was during that time of steel shortages that architects and engineers, as well as government authorities, saw in it possibilities for conserving steel in commercial and industrial buildings.

By applying a 1-inch fireproofing layer of vermiculite-gypsum plaster to steel columns instead of concrete ordinarily used, substantially lighter steel columns could be used.

Further uses were found—as an insulating medium both for sound and for heat. Its water-retaining properties and low density have made it valuable as a conditioner for soil and fertilizers. It can replace sand in plaster or concrete, making considerably lighter-weight sections.

Vermiculite is mined in Montana and South Carolina by one of its largest producers. As mined, the ore is a dense, black, wet-looking mineral. It is shipped in this form to processing centers. At these plants the ore is expanded 9 to 14 times in vertical furnaces into a light, fluffy substance weighing 6 to 10 pounds per cubic foot.

The expansion results from the explosive conversion to steam of small amounts of water trapped between very thin laminations of the ore when the ore is exposed to approximately 1800° F. Millions of tiny dead air cells are formed in the process, which provides vermiculite with its excellent insulating properties.

JAYE MAYALL
"The Cactus Chronicle"

* * *

COWS CRUNCH CACTI

Mrs. Waterman of New Zealand reports that her cows broke through her fence, trampled the cacti and ate the following: *Agave attenuata, Fouquieria, Billbergia nutans,* and other fleshy succulents. The next night they broke out of the paddock again and finished off a windbreak hedge of Bamboo and Coprosma. Their chief delight was the *Agave attenuata.* This might be a clue for a popular cattle feed!

* * *

SEEDS WANTED: Help rebuild the cactus collection in the National Botanic Garden in Athens, Greece. Send seeds to Dr. Evangelos Papoutsis, 30 Skiathou St., Athens 8, Greece.

* * *

Mrs. R. C. Proctor has an Orchid Cactus story and nine color illustrations appearing in the December issue of *American Home Magazine.* Watch for this issue, it is bound to be up to her usual high standard.

FIG. 79. Crowning Queen of Rattlesnakes. If this appeals to you send in your qualifications now.

RATTLESNAKE QUEEN

By MARY AND CHARLES POLASKI

Spring fever, a new rock garden completed, warm weather, the 13th Annual Rattlesnake Roundup at Okkene, Oklahoma, the need of a some colorful rock, brought about one of the most unusual and fascinating cactus collecting trips we have made in the past twenty-seven years.

Oklahoma is a place gold can't buy. When Kansas was being settled, some squire put up a sign on the southern boundry of the state, reading, "The country this side of this line is the finest land, and has the best people in the world." Those who could read, stopped there and settled in Kansas, those who couldn't read, including horse thieves, rustlers, bank robbers and their wimmin, took a look at the sign and went on to squat on lands that were to be Oklahoma and Indian Territory.

About the time their shootin' irons cooled down, Oklahoma became a state and the people turned out to be about as honest as a public official in Washington. So to prove our story we send you a half dozen newspaper clippings.

Rattlesnakes, thousands of them, come out of hibernation with the first warm days of spring. At the 13th Annual Rattlesnake Roundup at Okkene, there were approximately ten thousand people who scoured the hilly country and brought in 1684 rattlesnakes by six o'clock.

The past week, the third Annual hunt at

Waynoka, Oklahoma, over 4000 rattlers weighing over three thousand pounds were hauled into town by evening. The rattlers are sold to circus owners, rattlesnake meat canners, and shoe makers at fifty cents a pound, and the largest snake is always sold at auction; this year's prize brought forty dollars and was 68 inches long. Rattlesnakes move verly slowly when they first come out of their hideouts but soon regain their normal crawling speed after exercising several days. That is the reason why the roundups are held at that time of the year—usually the first two weeks in April.

During the past few years, Mary and I brought in 8 big rattlers from the Panhandle Ranch and brought them in for our local Zoo. We also brought in four large badgers but they are getting more scarce. This country abounds in *Coryphantha vivipara* and *Echinocereus purpureus* and it's usually a good policy to listen before you dig out, you might hear a buzzing sound. Only three per cent of snake bites are fatal and the person who is bitten by a rattler and lives, is automatically entitled to a Gold Embossed Certificate in the "Order of the White Fang." Every snake hunter who registers is given an identification card, just in case.

Snake Milking, well that's easy. Just hold a rattler in your hand and with his head between the thumb and the next two fingers; then with the second finger depress the top of his head and he opens his mouth. There you will see the original hypodermic needle, possibly an inch long. With the other hand rub gently a sac, inside his mouth just below the eyes towards the fangs, and you will readily milk out from three to five drops of venom from the fang. The other side can be done the same way. After a snake is "Milked" don't bother to test out for more venom, it's possible there is still some left.

Young snakes are more deadly than the older ones. With our experience with rattlers, they are pretty good old boys, and they never strike you without a warning. They usually can strike about a third of their length. Bull snakes and others found on the hunts are all brought in and readily sold on the market providing they are not injured. Catching them with a mechanical tong is easy and is devised so as not to hurt them. When caught just behind the head, they are easily lifted into a gunnysack and brought to market pretty safe.

Try putting a two-foot bullsnake into a fruit jar, screw on the perforated cap when you have him in the jar and I'll wager a ten spot he will be gone before the sun comes up. Experimenting with a half dozen, they all made their get-away. Try it sometime.

After the Snake Hunt we shoved off for Kingman, Arizona, where we motor-boated a couple hundred miles on Boulder and Davis dams and collected a few Ferocactus and other plants of the locale. It is a sight for sore eyes the way those Ferocactus cling to bare, rocky, steep slopes, and at the color of the spines, yet just a few feet above the water line. Rock hunting the

FIG. 80. Note the tongs that permits the handling of the snakes without damaging the snake or harming the handler.

lakes is best done with a motorboat; we stopped at many a point and picked out colorful rocks. Huntington Gardens was next on the list and we did a half day amongst the cactuses, and camellias.

Then a thriller to Baja California where we collected sea shells and plants of that area, a return to El Cajon and a rest, then Tucson, Bisbee and Agua Prieta, where we found a young Mexican woman with some beautiful cactus, and who really wanted to take us a hundred miles South of the Border. Did we accept? Sure. We collected a few plants and acquired some from her. Next was Deming. If you ever wondered what becomes of those beautiful shapely Chorus Girls, when they reach their sixties, brother we can tell you. We met one of the original Floradora Sextette gals and she was just as full of pep and vitality as the day she did the Can Can at the Bird Cage in Tombstone. She knew her cactus, jovial, and kind, and always smiling. After seeing her outdoor garden we headed home, loaded.

Visiting relatives in Greer County, Oklahoma, we stopped a couple of days to pick up some *Echinocereus Baileyi* and *Mammillaria Heyderi* which grow plentifully in that part and while digging out some plants we spied a wolf making for the timber with a rancher's chicken in his mouth. A friend who was with us, and a member of the Greer County Wolf Hunters Association, was overjoyed at that sight and readily we quit cactus hunting and soon we had a pack of hounds on the trail. Stehr keeps some flop-eared hounds, "Floppies" we call them, and has some sixteen wolves hanging from his fence posts—a sure sign of a good pack. These floppies are small hounds and noted for their continuous running for about twenty-four hours without resting. We were lucky again; when the hounds got the scent we had some fun. Wolves, like jackrabbits, seldom leave their haunts very far and by the baying of the hounds we could usually tell in what direction or way they were running. A wolf hound is supposed to run down a wolf in an hour or so but for fun floppies are better. Evening began to creep in and we had to leave hoping the wolf was captured. We visited relatives, looked over cactus gardens, and that night we just had to go to a good old-time country dance. So-called "Hillbilly" music played by people who still remember what the cluck of an old Peter Schuttler wagon sounds like.

The old nesters, like us two old hayseeds, weren't fussy about dressin' up; we ate grub you don't find at the modern cafe. We had fun and that night we slept in a half dugout on a corn shuck and muletail grass mattress. Slept like a log till the morning sonata of the coyotes awoke us about daybreak.

South of Carnegie, Oklahoma, we collected a dozen *Echinocereus oklahomensis* for friends overseas and with that we soon were back home again.

Enclosed clipping shows where Storm Cellars are located, so if we miss the next tornado we will be headed into the Big Bend county on our next trip. Oklahoma is improving and progressing, and from the days of the horse thieves there is now a land of darn good "peepul," just like in Washington.

FIG. 81.

NEW BOLIVIAN CACTI, III

By PROF. MARTIN CARDENAS

Samaipaticereus gen. nov.

Mesophanerophytum, columnare, compresso-costatis, valde adscendens ramosum. Costis paucis, tranverse sulcatis. Areolis triangularibus, cinerei tomentosis. Aculeis conicis, subulatis, brevissimis, radiantibus. Alabastri apicibus depressis. Floribus numerosis sub apice, anguste infundibuliformibus, nocturnis. Ovario tuboque squamosis, tomentosis, setosis. Phyllis perigoni interioribus candidis. Fructo globoso, apice truncato, lateralibus dehiscens, pulpa aurantiaca. Seminibus parvis, atro bruneis, nitentibus.

Samaipaticereus Corroanus sp. nov.

Arboreus, erectus, 3-3.5 m. altus; truncus 10-15 cm. diam., superne valde ramosis; ramis atro viridibus, 4 cm. diam. Costis 4-6, valde compressis, 1.5 cm. altis, 2 cm. a base latis. Areolis 1.5 cm. spatio separatis, triangularibus, 5 mm. diam., cinereo tomentosis. Aculeis plus minusve 5, brevissimus, cinereis, subulatis, radiantibus, 2-3 mm. long., plus unus 5-10 mm. long, cinereo, apice brunescente deorsum directo; omnia aculea a basim incrassata. Alabastri apice inmersus. Floridbus numerosis, 4.5-5 cm. long,, anguste infundibuliformibus, parce incurvatis. Ovario globoso, 1 cm. diam., squamis brevibus, carnosus, viridis, apice obtuso, denso pilis bruneis, brevibus et sparse setis bruneis, flagelliformibus praedito. Tubo aliquid incurvato, paululum sursum patens cum denso pilis bruneis et paucis setis flagelliformibus in squamis 1-1.5 cm. long., obtusis axillis. Phylla perigoni exteriora albo viridiscentia, apicibus bruneis, lanceolata, 1 cm. long.; interiora alba, anguste elliptica, 1 cm. long. Stamina duplici seriali, inferne 2 cm. long., superne 4 mm. long.; filamentis tenuis, albis, antheris temperato flavis. Stylo 3.5 cm. long., non exserto, albo, 7-10 ramis stigmaticis flavo albidibus coronato. Fructus globosus, apice truncato, 2-3 cm. diam., tuberculatus, rubis salmoneo, lateralibus dehiscens, pulpa aurantiaca. Semina 1.5 mm. long., atro brunea vel nigra nitentia.

Hab. In humidis dumosis.

Obs. Species detectori, Anibal Corro dicata.

FIG. 82.
Samaipaticereus Corroanus Cárdenas, sp. nov. x 0.02

Tree-like plants, 3 to 3.5 m. tall with a low trunk 10 to 15 cm. in diameter. Branches long, numerous, ascending, dark green, about 4 cm. in diameter. Ribs 4 to 6, very acute, 1.5 cm. high, 2 cm. broad at the base. Areoles 1.5 cm. apart, triangular, 5 mm. in diameter, gray felted. Spines about 5, very short, subulate, brownish while young, later grayish-white, 2 to 3 mm. long with swollen base. One of the spines is longer, about 5 to 10 mm. long, gray, brown tipped and directed downward. Flower buds with sunken tip. Flowers numerous, from near the top of branches, 4.5 to 5 cm. long, narrowly funnelform, slightly curved above the ovary. Ovary globose, about 1 cm. in diameter, fresh green, provided with fleshy, short, obtuse scales, bearing at its very tip very short, dense, brown hairs and few scattered flagelliform bristles. Tube slightly curved, widening above, dark green, covered by 1 to 1.5 cm. long fleshy scales, which bear at their obtuse tips dense brown, short hairs and a few light brown bristles. Upper scales of the tube thicker and shorter. Outer perianth segments lanceolate, 0.8 to 1 cm. long, whitish-green; next segments, white, brown-tipped, 12 mm. long; innermost ones, 1 cm. long, elliptic or linear, round tipped, pure white. Stamens in two rows, lower ones from the upper part of the tube cavity, 2 cm. long; upper ones from the base of the petals, 4 mm. long. Filaments thin, white; anther light yellow. Style about 3.5 cm. long, white, not exserted. Stigma rays 7 to 10, 3 mm. long, light yellow. Nectar cavity 1 cm. long, white, turning red in drying. Flowers strictly nocturnal. Fruit globose, truncate, bearing the dry flower parts, red salmon colored, tuberculate, splitting lengthwise and showing in maturity a red-orange pulp which contains a pigment similar to "annatto" (*Bixa Orellana*) and soluble in water. Seeds 1.5 mm. long, dark brown or blackish, glossy, with a broad hilum; minutely pitted.

Bolivia. Provincia de Florida. Departamento de Santa Cruz. "El Puente" de Samaipata. 1500

FIG. 83.
Samaipaticereus Corroanus Cárdenas, sp. nov. x 0.9

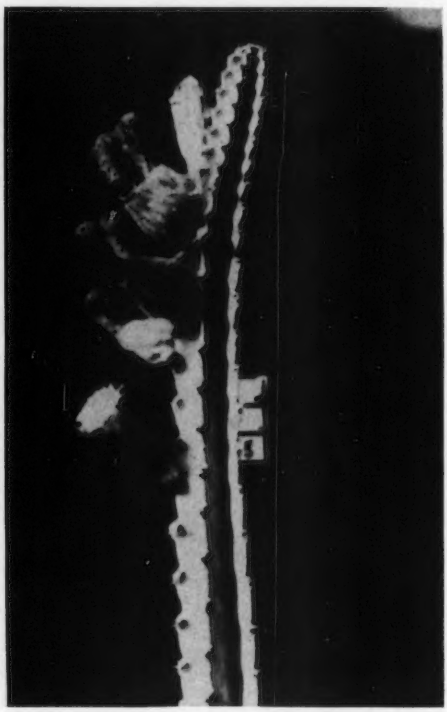


FIG. 84.
Samaipaticereus Corroanus Cárdenas, sp. nov.

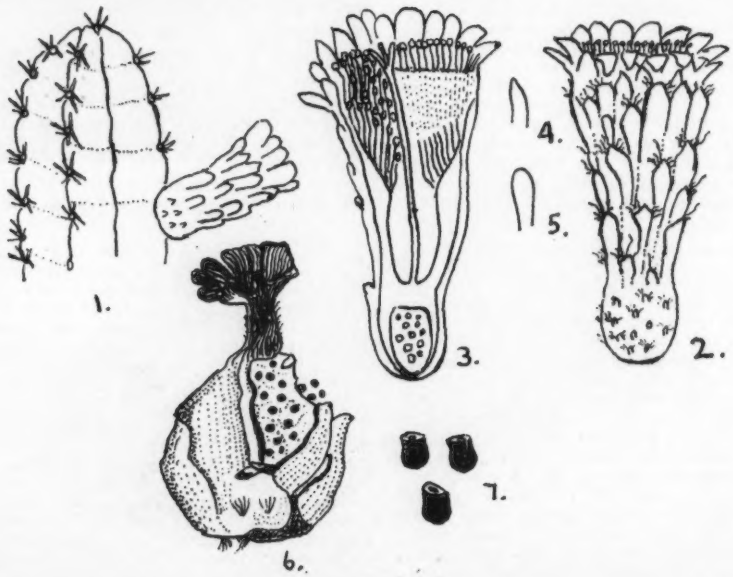


FIG. 85.
Samaipaticereus Corroanus Cárdenas, sp. nov. 1, Stem top with flower bud, x 0.5; 2-3, Flower, x 1; 4-5, Outer and inner perianth segments, x 1; 6, Fruit, x 1; 7, Seeds, x 4.

m. Marzo de 1949, *Anibal Corro. s. n.* Octubre de 1950, *M. Cárdenas 4816* (TYPE), in Herbarium Cardenasianum and cotype in U. S. National Herbarium.

The new genus *Samaipaticereus* shows no relation with known genera of Cereoid cacti in Bolivia. It differs from *Trichocereus* by its rather short and quite tubular flower which bears, on the ovary and tube, scales and flagellum-like bristles. The pulp of the fruit, soluble in water and orange-red colored, is unusual. The species *Pilocereus campinensis* Bckbg. et Voll. (*Neue Kakteen Aus Brasil.* Rio de Janeiro. 1949), included tentatively in that genus, seems related to our new genus. Unfortunately the lack of more conclusive description of the flower in the Brazilian publication and the complete omission of fruit description, prevents us from the finding of a clearer relationship. The name of the genus comes from Samaipata, the place where these cacti were discovered by Mr. Anibal Corro.

Cleistocactus dependens sp. nov.

Dependens vel reptans, cylindricus, articulatus, parce ramosus. Ramis 3-4 cm. diam., atro viridibus. Costis 10-12, rotundis, obtusis, transverso sulcatis. Areolis 11-15 mm. approximatis, circularibus, 2 mm. diam., prominentibus, superne cinereis, inferne atro bruneis vel nigrescentibus tomentosis. Aculia radialia 8-13, gracilia, 2-3 mm. long., pungentia, cinereo rubescentia; aculea centralia 3-4, radiantia vel unum deorsum tendens, 10-15 mm. long. Alabastri setis albis, erectis, longis, velatus. Flores rectis, regularis, tubulosis, non zygomorphi, 4-4.5 cm. long., 7 mm. diam. Ovario globoso, 5 mm. diam., atro purpureo, squamis brevibus, atro mucronatis, pilis brevibus, undulatis et setis parvis, albis praedito. Tubo squamoso, fraga roseo, squamis apice atro mucronatis, pilis albis, brevibus et setis albis instructus. Phylla perigoni exteriora 6 mm. long., rosea flava viridia ,atro brunei mucronata; interiora lanceolata vel spathulata, 12 mm. long., temperato viridia, extra recurvata. Filamenta alba, antherae purpurae. Stylus 2.8 cm. long., albo viridis, paulo exsertus, 5 ramis stigmaticis temperato viridibus coronatus. Fructus globosus, 11-14 mm. diam., atro rubi magentibus, fulgens, parce pilis brevibus, albis et setis praeditus. Semina parva 1 mm. long., atro nitentia.

Hab. In humidis collinis saxosis.

Obs. Floret Augusto-December.

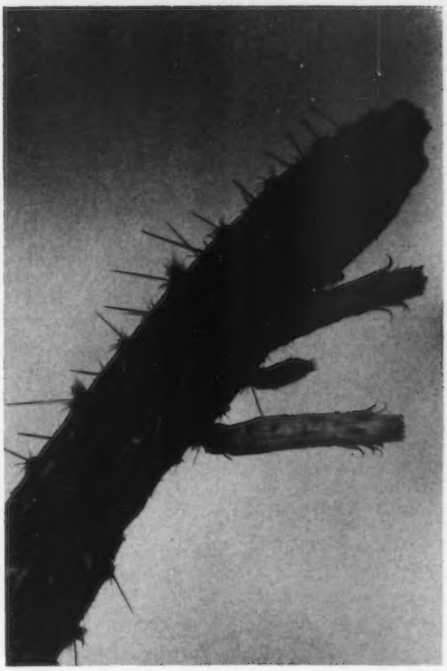


FIG. 86.
Cleistocactus dependens Cárdenas, sp. nov. x 0.6

Dependent, procumbent or clambering, cylindrical plants, branched and articulate. Branches 3 to 3.5 cm. in diameter, dull green, slightly tapering. Ribs 10 to 12, round, about 3 mm. high, 7 to 10 mm. broad, sulcate with transverse furrows. Areoles 11 to 15 mm. apart, circular, prominent, 2 mm. in diameter with whitish gray felt above and black below. Radial

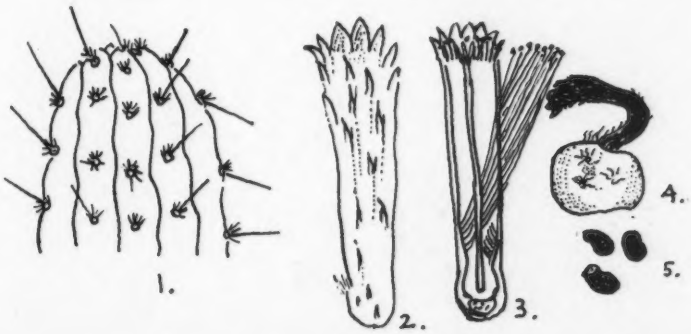


FIG. 87.
Cleistocactus dependens Cárdenas, sp. nov. 1, Top of stem, x 1; 2-3, Flower, x 1; 4, Fruit, x 1; 5, Seeds, x 6.

FIG. 88.
Cleistocactus dependens Cárdenas, sp. nov. x 0.3

spines 8 to 13, finely acicular, 2 to 3 mm. long, spreading, pungent, reddish gray. Central spines 3 to 4, spreading, darker in color than the radials. One of the centrals 10 to 15 mm. long, gray, black tipped, directed downwards. Flower buds reddish brown, covered with long, white, stiff bristles. Flowers from near the top of joints, six or more in number, straight, tubular not zygomorphic, 4 to 4.5 cm. long, 7 mm. in diameter. Ovary globose, 4 mm. long, 6 mm. broad, dark purple with short scales ending in a blackish bristle-like mucro, and with short curled hairs and white bristles. Tube strawberry colored with short, broad scales, narrowing by a black mucro 2 to 3 mm. long and bearing short, white, curled hairs and 1 to 3 white, long bristles. Outer perianth segments about 6 mm. long, pink at the base, then green-yellow and ending in a dark brown, filiform mucro. Next segments 1 cm. long, lanceolate, acute, green. Innermost segments lanceolate or spathulate, 12 mm. long, light green above and whitish below. Interior of the tube whitish. Filaments white, anthers purple. Style 2.8 cm. long, greenish white, slightly exserted. Stigma rays 5, light green, 4 mm. long. Fruit globose, 10 mm. long, 14 mm. broad, deep reddish magenta, shiny, provided with few short, white hairs and bristles. Seeds black, shiny, 1 mm. long and finely pitted.

Plants growing on humid rocky slopes, self-fertile, flowering from August to December.

Bolivia. Provincia de Florida. Departamento de Santa Cruz. "La Negra," 1400 m. Marzo de 1949, *Anibal Corro s. n.* Octobre de 1950. *M. Cárdenas 4817* (TYPE), entre La Angostura y La Negra, 1200 m., in Herbarium Cardenasianum. Cotype in U. S. National Herbarium.

This new species shows no relationship with the known members of the genus *Cleistocactus*. By the color of flower it reminds one of *Cleistocactus smaragdiflorus*, and by the broad, round ribs resembles *Cl. laniceps*. It differs from all known species in the long distance between areoles, the short radial spines, and the bristles on flowers.

Cleistocactus Brookei sp. nov.

Erectus, columnaris, 40-50 cm. altus. Ramae 3-4.5 cm. diam., temperato viridis. Costis 22-24, angustis, 3 mm. altis, 3 mm. latis, transverso sulcatis. Areolis 3-4 mm. spatio separatis, circularis, 2 mm. diam., prominens, albo cinereis vel bruneis tomentosis.

FIG. 89.
Cleistocactus Brookei Cárdenas, sp. nov. x 0.4

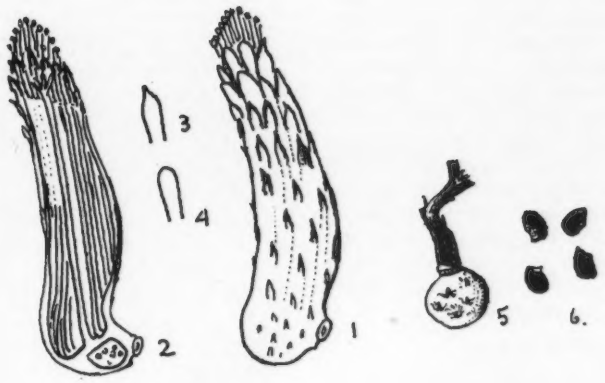


FIG. 90.
Cleistocactus Brookei Cárdenas, sp. nov. 1-2, Flower, x 1; 3-4, Outer and inner perianth segments, x 1; 5, Fruit, x 1; 6, Seeds, x 4.2

Aculeis 25-30, vix distinguentis inter aculia marginalia aut centralia, divaricatis, tenuissime acicularibus, 4-10 mm. long., innexis, paleari flavis. Flores ex tercia superiore ramarum, manifeste zygomorphi, incurvatis, 5 cm. long., atro rubei. Ovario globosa, curvato, 12 mm. diam., squamoso, squamis brevibus, rubeis, mucronatis, pilis albis, sericeis praedito. Tubo compplanato, superne constricto, squamis atro rubeis, apice purpureo instructo. Phylla perigoni exteriora, lanceolata, extra curvata, flavo aurantiaca, apice atro rubeo; interiora spathulata, flava. Stamina duplici seriali inserta; filamentis tenuissimis, albis, superne purpureis, antherae atro violae. Stylo gracili, 4.5 cm. long., albo; ramis stigmaticis pilosis, 2.5 mm. long., tenuis, viridiscentibus. Fructo globoso 8-10 mm. diam., purpureo, squamoso, albo piloso, superne dehiscente. Semina parva, 1.2 mm. long., nigra.

Hab. In humidis petrosis.

Obs. Species collectorae Winifred M. Brooke dicata.

Erect, columnar plants, 40 to 50 cm. tall. Branches 3 to 4.5 cm. in diameter, light green. Ribs about 24, very narrow, 2 to 3 mm. high and broad, sulcate with transverse furrows. Areoles 3 to 4 mm. apart, circular, 2 mm. in diameter, with light gray felt above and dark brown below. Spines not differentiated into radials and centrals, about 25 to 30, finely acicular, spreading, 4 to 10 mm. long, straw yellow or grayish in colour. Top of stems covered with a tuft of light brown, fine, bristle-like spines. Flowers few in number, sometimes a single one from the top of the branches, arranged mostly in a vertical row, clearly zygomorphic, S-shaped, 5 cm. long, deep red. Ovary globose, curved, about 12 mm. in diameter, with short, red, mucroante scales which bear white silky hairs. Tube slightly flattened, about 1 cm. broad at the base, then narrowing above; tube scales dark red, purplish tipped. Outer perianth segments lanceolate, bent outwards, deep red above, orange yellow below; inner segments spathulate, purplish white below, yellow above. Stamens in two rows; filaments very thin, white below, purplish above; anthers dark violet. Style 4.5 cm. long, thin, white, greenish above; stigma lobes 5, hairy, light green, 2.5 mm. long, thin. Fruit

FIG. 91.
Cleistocactus Brookei Cárdenas, sp. nov. Approx. x 1.

globose, about 1 cm. in diameter, purple with a few white hairs at the axilla of the scale, opening above. Seeds dark brown, 1.2 mm. in diameter.

Bolivia. Provincia de Cordillera. Departamento de Santa Cruz, "Pozo No. 4," Camiri;

900 m. Marzo de 1949. *A. Corro s. n. Herbarium Cardenasianum, 4818* (TYPE). Cotype in U. S. National Herbarium. Agosto de 1949, *Miss Winifred Brooke s. n.* entre Sudañez e Incahuasi, Provincia Hernando Siles. Departamento de Chuquisaca, Bolivia, 1200 m.

This new species suggests none hitherto known in the genus *Cleistocactus*. By its habit, not considering the flower, it reminds one, particularly in its dense, finely acicular spines, of *Cleistocactus Straussii*, but differs in its striking flowers, which are few in number, arranged in one row, and have the ovary unusually curved and a reduction of the nectar cavity.

Cleistocactus candelilla sp. nov.

Columnaris erectus vel reptans, in base ramosus 0.5-1 m. altus. Ramis 3 cm. diam., atro lactucae viridibus. Costis 11-12, obtusis, 3 mm. altis, 4 mm. latis, transverso sulcatis. Areolis 5 mm. inter se distantibus, ellipticis vel circularibus, 2 mm. diam., prominentibus, denso atro brunei tomentosis. Aculeis radiantibus, intrincatis, superne flavo bruneis, inferne albidibus; marginales 13-15, aculares, 2-5 mm. long; centrales 3-4, aciculares, 1-2.5 cm. long., longiores horizontaliter, vel superne, vel inferne directae. Alabastri breviter cylindricus, temperato ruber, apice flavo. Flores numerosis, 3-3.5 cm. long., tubuloso cylindrici vel pauce zygomorphi. Ovario globoso, squamis roseo bruneis, pilis brevibus, albis praedito. Tubo parce constricto supera ovarium, dimidis parce patens, temperato purpureo, squamis carnosis, parce pilosis vel glabris instructo. Phylla perigoni exteriora lanceolata. flava, apice brunea, extra recurvata; interiora in tubo disposita, purpura, albis marginata, spathulata. Stamina duplici seriali inserta non perigoni superans; filamentis tenuis, albis, antherae temperato purpurae. Stylo plus minusve 2 cm. long., albo, superne roseo, 7 ramis stigmaticis, temperato viridis vel flavidulo coronato. Fructo globoso, 1 cm. diam., parce pilis brevis, albis praedito.

Hab. In dumosis aridis.

Vernacula: Candelilla.

Plant erect or creeping, thicket forming, 0.5 to 1 m. tall. Branches from the base, rather slender, about 3 cm. in diameter, deep lettuce-green colored. Ribs 11 to 12, round, 3 mm. high, 4 mm. broad, sulcate with transverse furrows. Areoles about 5 mm. apart, broad-

FIG. 92.
Cleistocactus candelilla Cárdenas, sp. nov. x 1.

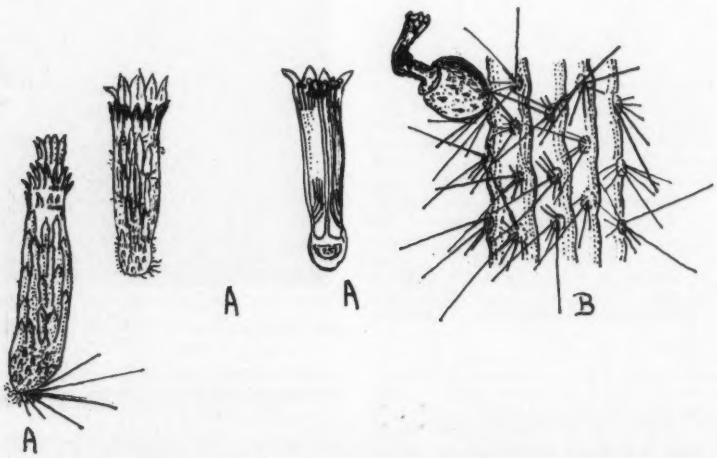


FIG. 93. *Cleistocactus candelilla* Cárdenas, sp. nov. A, Flower, x 1; B, Stem, x 1.

ly elliptic or circular, prominent, 2 mm. in diameter, densely brown felted. Spines spreading, yellowish brown above, whitish below, interlaced, finely acicular; radial spines 13 to 15, short, 2 to 5 mm. long; centrals 3 to 4, slightly flattened, 1 to 2.5 cm. long, the longest ones horizontally directed upwards or downwards. Top of stems with short oil-yellow spines. Flower buds short, cylindric, reddish, yellow tipped. Flowers numerous, from near the top of branches, 3 to 3.5 cm. long, tubulose-cylindric or slightly zygomorphic. Ovary about 4 mm. in diameter, with fleshy, brownish pink, hyaline tipped scales which bear a few upwardly appressed fine white hairs. Tube straight or slightly curved and constricted above ovary, widening at its middle, light purple, with fleshy, darker scales 2 mm. long, which are sometimes provided with a few white hairs. Outer perianth segments lanceolate, acute, 2 to 3 mm. long, yellow, brown tipped, curved outwards. Inner segments forming a tube of purple petals with a white frame, spathulate, about 7 mm. long. Stamens in two rows, not exserted; filaments thin, white; anthers light purple. Style about 2 cm. long, white, purplish above. Stigma rays 6 to 7, light green or yellowish. Fruit globose, about 1 cm. in diameter, light salmon red, with a few short white hairs arising from the scales.

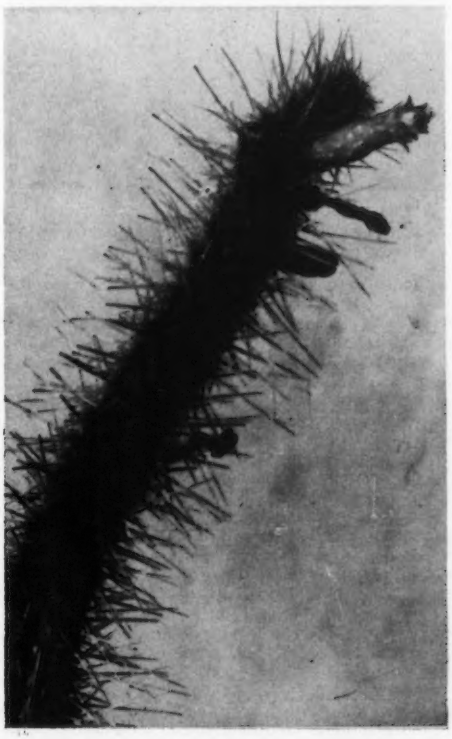


FIG. 94.
Cleistocactus candelilla Cárdenas, sp. nov. x 0.3

Bolivia. Provincia de Florida. Departamento de Santa Cruz. Agosto de 1949. La Tigre (Pampa Grande), 1400 m. *A. Corro. s. n.* Misma localidad, Octubre de 1950. *M. Cárdenas 4819* (TYPE) in Herbarium Cardenasianum. Cotype in U. S. National Herbarium. The same species was found at Comparapa, 2000 m., and at Samaipata, 1500 m. (Provincia de Florida).

This new species shows no relationship with any other known species in the genus *Cleistocactus*, being distinguished by its tubular, rather straight, red, yellow-tipped flowers. This is a very common cactus on the borders of the highway from Cochabamba to Santa Cruz, where it forms a natural fence. The vernacular name *candelilla* is Spanish and means "small candle," in allusion to the flame-like flowers.

Cleistocactus candelilla Cárdenas var. **pojoensis** var. nov. Cárdenas.

Columnaris in base ramosus, 1-3 m. altus. Ramis 4-5 cm. diam., apice angusto. Costis 13-17, 3 mm. altis, 5 8 mm. latis. Areolis 7 mm. inter se distantibus, circularibus, 3-4 mm. diam., bruneis tomentosis. Aculeis acicularibus, divaricatis, cinereis, apice bruneo; radials 8-12, 4-8 mm. long.; centrale 1, plerumque inferne directae, 2-3 cm. long. Alabastri pilis albis velatus. Flores tubulosi, 4 cm. long., fere incurvatis

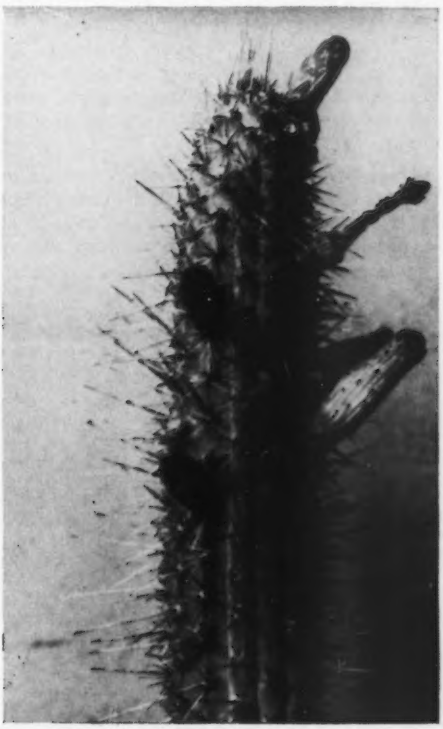


FIG. 95.
Cleistocactus candelilla Cárdenas var. *pojoensis* Cárdenas, var. nov. x 0.5

supra ovarium, dimidio patens, fauce constricti, inferne viridis aurantiacae, superne rubis magentibus. Phylla perigoni exteriora atro magentibus, acutis; interioris lanceolatis, rubi magentibus. Filamentis albis, antherae magentae, pollen albis. Stylo exserto, fere crasso, albo; ramis stigmaticis 7-8 viridibus. Fructo globoso, 12 mm. diam., atro magentibus, squamoso, piloso.

Plants columnar, branched from below, 1 to 3 m. tall. Branches 4 to 5 cm. in diameter, tapering, dull green. Ribs 13 to 17.3 mm. high, 5 to 8 mm. broad, sulcate with transverse furrows. Areoles 7 mm. apart, circular, prominent, 3 to 4 mm. in diameter, brown felted. Radial spines acicular, 8 to 12, light brown to gray, 4 to 8 mm. long; central spine 1, ordinarily directetd downward, gray to brown, pointed, 2 to 3 cm. long. Top spines 1 to 2 cm. long, directed vertically, whitish or brown. Flower buds covered by white hairs. Flowers rather numerous, from near the top of the branches, tubular, 3.5 to 4 cm. long, slightly curved above the ovary, then widening to the middle, and constricted at the fauces. Ovary globose, about 8 mm. long, orange-green with pink scales which bear short white hairs. Tube light magenta, with long darker scales provided with short whitish hairs. Outer perianth segments acute, straight, dark magenta; inner segments lanceolate, 5 mm. long, magenta colored. Stamens in two rows; filaments white below, purplish above; anthers magenta and pollen white. Style about 2.7 cm. long, white, rather thick, slightly longer than the stamens. Stigma rays 7 to 8, light green, 2 mm. long. Fruit globose, about 12 mm. long, dark magenta, with minute scales bearing a few white hairs. Seeds 1 mm. long, glossy black.

Bolivia. Provincia Carrasco, Hacienda La Habana (Pojo). Departamento de Cochabamba, 2500 m. Also at Huerta Molina in the same province and at Mizque (Provincia de Mizque) 2000 m.

This variety differs from the type species in its erect, taller and thicker stems, in the longer flowers, which are greenish below, orange at the middle, and reddish-magenta above, and by a wider geographical distribution.

FIG. 96.
Cleistocactus sucrensis Cárdenas, sp. nov. x 0.3

Cleistocactus sucrensis sp. nov.

Columnaris caespitosis, a base ramosus, 0.80-1 m. altis. Ramsi 4.5-5.5 cm. diam., lactucae viridis. Costis 24, transverso sulcatis, 3 mm. altis, 5 mm. latis. Areolis 8 mm. spatio separatis, circularis vel ellipticis, 3 mm. diam., prominentibus, in statu novelli brunei, dein cinerei tomentosis. Aculeis 15-18, non distinguentes in aculeis radialis nec centrales, inaequalis, 0.8-6 cm. long., valde tenuis, acicularibus, paleari flavis vel hyalino cinereis. Flores numerosis, zygomorphis, 6.5-8 cm. long., vinoso rubis, apice constrictis. Ovario globoso, 1 cm. diam., squamis numerosis, brevis, atro purpureis, apice viride albido mucronatis, densissime pilis albo salmoneis praedito. Tubo parce arcquato, supra ovarium constricto, interiore albo. Phyllis perigoni exterioris lanceolatis, 10-12 mm. long., atro salmoneo purpureis; interioris lanceolatis, 17 mm. long., temperato magentibus. Stamina duplici serialis, inferne 5 cm. long., superne 2 cm. long.; filamentis albo magentibus, antherae atro magentae. Style 6 cm. long. a base contortus, albo, vix exserto; ramis stigmaticis 7-8, temperato viridis vel flavidulis, minute pilosis, 5 mm. long. Fructo ignoto.

Hab. In petrosis aridis.

Columnar, caespitose, branched from the base, 0.8 to 1 m. tall. Branches 4.5 to 5.5 cm. in diameter, lettuce-green colored. Ribs about 24, 3 mm. high, 5 mm. broad, sulcate, with transverse furrows. Areoles 8 mm. apart, circular to elliptic, 3 mm. diameter, prominent; young areoles brown felted, old ones with gray felt. Spines 15 to 18, not differentiated into radials and centrals, uneven, slenderly acicular; young spines straw-yellow colored, old ones whitish gray, hyaline, with minute black spots; all spines spreading; shortest ones about 8 mm. long, medium sized, 1.5 to 2.5 cm. long, the longest one 4 to 6 cm.; longer spines horizontal or directed downwards; spines at near the top of branches, directed upwards. Flowers rather numerous, from near the top of stems, 6.5 to 8 cm. long, zygomorphic, slightly bent above the ovary, constricted at the fauces, wine-red colored. Ovary globose, 1 cm. diameter, densely covered by short, acute, dark purple scales which end in a whitish green mucro, and bear dense, short, whitish salmon hairs. Tube slightly S-shaped, constricted above the ovary, widened at its middle, and narrowed at the limb, which is oblique; scales on the tube dark purple, acute, light green tipped, provided with whitish salmon and a few blackish hairs; interior of tube white. Outer perianth segments lanceolate, 10 to 12 mm. long, dark salmon purple with a darker zone at the middle; inner segments lanceolate, about 17 mm. long, magenta colored. Stamens in two rows, lower ones 5 cm. long, upper ones 2 cm. long; filaments white below, magenta above; anthers dark magenta. Style about 6 cm. long, white, twisted below and only

slightly exserted at anthesis; stigma rays 7 to 8, hairy, 5 mm. long, light green or yellowish. Fruit not seen. Self sterile plants, very seldom flowering.

Bolivia. Provincia de Oropeza. Departamento de Chuquisaca. Kilometro 7 de Sucre á Tarabuco, 2750 m. Febrero de 1949, *M. Cárdenas 4820* (TYPE), in Herbarium Cardenasianum. Cotype in U. S. National Herbarium.

This new species is related to *Cleistocactus Buchtienii* by the morphology of flowers. It differs, however, in its lower, caespitose habit, the thicker branches, the straw-yellow spines, the slightly longer flowers, and the only slightly exserted style.

To be continued

FIG. 96a.
Cleistocactus sucrensis Cárdenas, sp. nov. Flower, x 1.

Homo Sapiens and the Desert

Many years ago, when the human race first began to get scientific, some joker, who definitely did not suffer from an inferiority complex, gave to the genus and species of which he fancied himself a part the imposing name of "homo sapiens," the wise man.

From that time on scientific man has progressed to the point which ultimately resulted in our present civilization. Each succeeding generation of homo sapiens has set out to prove that it could be sappier, I mean sapiensier, than its predecessor, and the final result of such noble effort is indeed a magnificent sight to behold. Probably nowhere is man's genius more evident than in the manner in which he conquered, civilized and improved that last and toughest frontier, the great deserts, formerly known as God's Country.

Today we can climb in our car and in a few short miles we are out in the open. A beautiful macadam road streaches ahead and our eyes are gladdened by the sight of the grimey rear end of the car ahead. The sweet odor of exhaust gas tickles our nostrils; but when we turn our eyes to the side there greets us, indeed, a sight of exceptional beauty. Where there used to be nothing but Yuccas, Cacti, palo verde and ugly blue mountains, we behold today man's finest masterpieces. A thousand large and small billboards grace the landscape with a hundred bright colors and their magnificence leaves us spellbound. Not only do our fellow humans furnish us with this remarkable beauty, but they throw in a free education as well. We can learn of gasoline which is full of eager power; of bread with an over abundance of Vitamin A, B, and C; of beer with extra Vitamin P; of shaving cream and lotions which make you more kissable and shoes which will outwear your feet. We can read about gambling places 1200 miles away where you can try your luck (you'll need plenty); of Navajo rugs and curios; ice cold pop and tourist cabins. Hotels will tell of beds which years ago had fair mattresses, and a fence post is graced with a "Bait for sale" sign—though it does not say what anyone could want bait for. A mammoth cave invites you for a visit, at a dollar per head; a 20 x 30 ft. creation extolls the advantages of shopping at Moe Levy's, only 153 miles to go, et cetera, etc. ad infinitum.

After 20 miles of this we leave the main road. The beautiful billboards are scarcer here and we can see an occasional desert tree, covered with nasty golden flowers. We can now also see patches of desert wildflowers with their disgusting variety of colors—fortunately, their stench is not noticeable as the sweet and pungent odor of the road dust mercifully drowns out all other smells.

But even here on the side roads the flower-covered desert has been improved by Homo sapiens. The gleam of torn cellophane, a broken bottle here and some old beer cans there add cheerful flashes of light to the general drabness. Variety is furnished by a pile of broken bricks and some other building rubble thoughtfully dumped by the side of the road by some unknown public-spirited contractor. As we bounce along towards our pre-selected picnic spot we look for new discoveries. We see four old tires, three rusty bedsprings, three shoes (non-matching, of course) last Sunday's comic sheets, a venerable "Model T." sans motor, wheels and paint.

At the base of a hill comes our picnic. Homo sapiens has been a little slow here and no attractive corrugated tin shelter is here yet to protect us from the disagreeable sun. So we drag our baskets under an old mesquite tree for shelter. Half of this tree is dead already, singed and burned by previous camp fires, but the other half still stupidly tries to put forth a few flowers, not realizing that the effort is wasted. Other cars are here already and more are coming, dumping their loads of homos. With young and old ones, fat and thin ones, curly and baldheaded ones the species is well represented.

FIG. 97. A beautiful specimen of *Carnegiea gigantea.*

While eating our lunches we peruse the attractive surroundings. A predominating part of the general view consists of paper. There are waxpapers, kleenex, paper cups, newspapers, brown paper, milk cartons and colorful tin can labels in great profusion; but color is added to the scene by banana peelings, apple cores, half sucked oranges, tin cans and bottles (the latter mostly of the beer, booze and pop variety).

A dozen yards away a venerable Saguaro is defiantly hanging on to life. It is dressed up like a Christmas tree and gaily decorated with rags, papers and two old tires. One of these still has some rubber left to indicate its once useful past while the other has rotted away till only the wire bead is left. What a magnificent testimonial to man's achievements, and what inspiration homo sapiens must receive from beholding the humiliation of the dying Giant of the desert.

Where once foolish birds used to sing their silly songs we can now enjoy the melodious screeching of self-styled ladies, and their fine uninhibited prodigy. The half-grown males enjoy themselves by burning down bewhiskered Yuccas and Chollas, thus ridding the desert of these unsightly plants. At the foot of the hill are a few dozen smashed Barrel Cacti which some noble soul has kicked down the slope—they really bounce beautifully. The removal of these ugly and useless plants, no doubt, improves the looks of the hillside while the spiny devils are left to die the miserable death they so justly deserve.

Some of the full-grown specimen of Homo sapiens (probably var. don quixote) are distinguishing themselves by fighting the Saguaros, those mean and dangerous Giants with which the desert still abounds. But, though our heroes use axes, pistols, knives and shot-guns, they seldom succeed in killing the Saguaro outright. But it is gratifying to know that the grievous wounds inflicted will eventually finish off these vicious monsters and in the meantime their beautifully carved initials are an inspiration to those who follow.

Homo's wisdom and compassion is shown by the kindness he showers on the more useful and agreeable creatures of the desert. These are the flies. Nowhere on earth are there so many millions of these little darlings so tame and well-fed as we can find them on a desert camp ground. They fearlessly park on baby's jam-smeared jowls or stick to your chicken leg till the last fraction of the second when your teeth clamp down. And considerate homo always leaves enough food and trash so the little dears won't have to go hungry till next Sunday.

Now all good things must come to an end and so we start for home. After a few miles of attractive billboard scenery we stop along the road for a refreshing drink of sugared water—flavored with genuine imitation grape or orange as our taste may be. The proprietor of this oasis is also the owner of an interesting zoo and various other attractions. The combined aroma of snakes (which are housed in a special Pit of Death), bears, possums, skunks, badgers, parrots, javellinas, Gila monsters, buzzards, plus a dozen unwashed monkeys provides another stimulating experience. We give a parting glance to the ferocious papier-mache wild man, complete with buckteeth, glass eyes and motheaten pelt.

And so for the road again.

The sun has set and for a moment it seems we might have to look at the miserable stars with their monotonous sameness for the past thousand years. Fortunately the neon lights are turned on, providing a much better display of color than a mere sunset. Waving tail-lights and a blinking traffic-light provide interesting action. Finally, a roast chicken in green and blue neon lights, followed by a ditto ice cream soda, tell us that we are home in civilization again.

What an inspiration a trip into the desert can be. Makes one really proud of being a homo sapiens. But during the day's last hour, before sleep brings final oblivion, I am often assailed by doubts. I ask myself if I have really done my share in this world of progress. Or is there something left undone which I might do to help in the general improvement of our desert. Tomorrow I must look and see. In attic or basement, garage or laundry, surely I can find some overlooked choice morsel of trash or garbage. Maybe a stiff old paintbrush, a broken windowscreen, a rusted out washtub, or maybe my neighbor can help with a busted cement barrel; I must ask him. Anything that is useless or filthy will do, of course, to take into the desert, there to be added to the evergrowing piles of junk—those inspiring monuments, erected in his own honor by homo sapiens.

C. E. MIEG.

* * *

Poor health has caused member F. B. Noyes, Vacaville, California, to offer all of his cacti for sale. Fine specimens, many not too common in collections.

* * *

Correction: In Fig. 67, July-August JOURNAL, the gentleman on the left is G. J. Tomlin.

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: Can you advise me as to how I can get information as to blooming time of cacti. I don't know winter blooming from summer or spring kinds. Mrs. Freda Scroge, Pa.

Answer: So much depends on the culture given your plants that such information can only be a rough guide.

Many Mammillarias bloom in winter. Some are very persistent even in the face of light frosts. Mam. Hahniana is one of them. Many Rhipsalis bloom very early. Zygocactus may be found in bloom often in November. Again they may not flower till March or April. In early spring the Neoporterias begin showing buds as do Lobivias and Echinocereus. Many Mammillarias also will be showing flowers. How soon they come on depends upon the weather. If cold or cloudy they sit tight but a few warm, sunny days brings quick life to them. As spring advances the Notocactus show their woolly buds as do Malacocarpus, Stenocactus, Coryphantha, Acanthocalycium, Ariocarpus, Astrophytum, some Ferocactus, Echinopsis in many species, Gymnocalycium, Rebutia, etc. April, May and June brings a flood of flowers. Then the flood subsides though many odd species and genera are showing here and there. As the heat of summer comes the larger Cerei show a multitude of buds. Some of the Eriocereus such as *E. Bonplandii* will often have as many as 75 large blossoms open in one night. The climbing cerei as Selenicereus, Hylocereus, Weberocereus, Werkleocereus, etc., are also flowering because they need plenty of heat. Some years the Trichocereus are wreathed in their snowy chalices while other years they may have but few flowers. In late summer and early fall some of the Texas and Mexican species have their best flowering period as *Ariocarpus fissuratus* and *Astrophytum asterias*. Here in Southern California there is considerable variation in the flowering period of many species particularly of those naturally flowering in early spring. Under window garden conditions the flowering dates would be much more variable.

FIG. 98. Part of the 200 plant collection of Mrs. Margaret Laabs, Gatesville, Texas. Her first plant was purchased in a Ten-cent Store during the Texas Centennial in 1936.

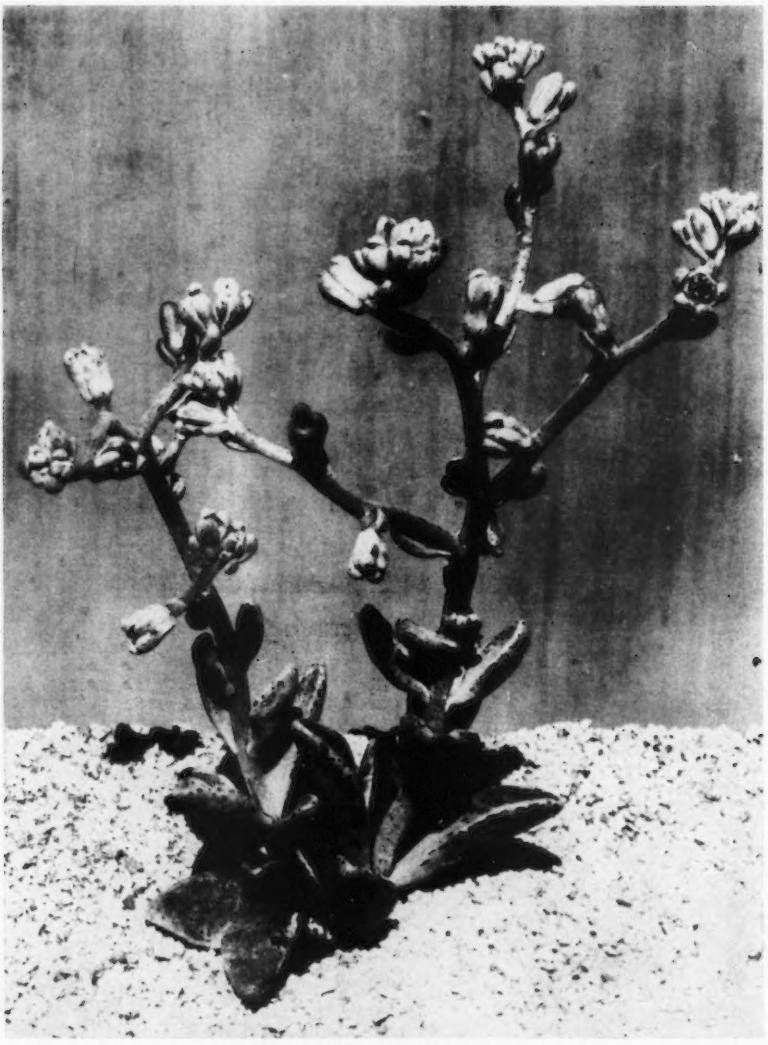


FIG. 77. *Lenophyllum guttatum* Rose nat. size.

LENOPHYLLUM GUTTATUM

By J. R. BROWN

Lenophyllum guttatum Rose in Smithson. Misc. Coll. 47 (1904) 160. pl. 20, in No. Amer. Flora 22, pt. 1 (1905) 27. *Sedum guattum* Rose in Bull. N. Y. Bot. Gdn. 3 (1903) 42.

Much branched at base, shortly caulescent.

Leaves in 2-4 pairs, glabrous, opposite, 2-3 cm. long, thickish, rounded on the back, broadly channeled on the face, of a sage-grey color blotched with purple-black, obtuse.

Inflorescence 3 or 4 branched; pedicels very short or wanting; sepals free nearly to the base, oblong, 3-4 mm. long, equal, green, obtuse; yellow but in old flowers drying reddish, free to the base; stamens 10, shorter than the petals, attached about one-third the way up from the

base; scales small, obtuse; carpels 5, distinct, erect; styles about as long as the carpels, slightly spreading in age.

Type locality: Mexico: Summit of a hill at Saltillo.

The above is Dr. Rose's description of this plant in No. Amer. Flora. and well describes the plant when grown under glass. When grown out of doors it is a somewhat insignificant and drab appearing little plant of a dull purplish-green color without markings and a very much shorter inflorescence. When grown under glass it is an attractive little plant however, the sage-gray leaves appear as if splattered with purplish-black ink. The dark markings occur throughout the inflorescence to the very fleshy sepals, although they take the form of small specks of purplish-black.

The flowers are not particularly attractive, the very fleshy sepals being most prominent and only the tips of the yellow petals are visible.

The photograph shows a plant which was grown by Mr. Al. Irving of Alameda, Calif., who is a very skillful grower of succulent plants and especially of the stemless Mesembs.

FIG. 78. *Lenophyllum guttatum* buds and flowers, enlarged.

FIG. 79. One of Hummel Garden "Wonder Collections." A collection of this kind would appeal to any collector. The plants should be segregated so that watering can be controlled.

Most Southwestern varieties, if in a well-drained-limey-soil survive even the heaviest rains and put out new growth as well. John Bock, Sharon, Pennsylvania, sets his out in flats, on soil. The results are all good. Although sun is not always with us, we do get blooms.

The plants that like it wet can stand a heavier, richer soil when in full growth. Those that like a moist soil drain readily either on the ground, in sand or hanging in the air. Epiphytic types when not too heavy hang from the metal bars and thrive, too.

Over a period of years I've also assembled a collection that is super-dryness itself. These belong to the extreme treatment list. They do not like water over the tops nor too much at the roots. These I keep under glass until the usual "drought period" strikes from "July 15 to August 25." Then I set them out where the sun is best and let them grow. They are then set back in the greenhouse or on the back porch where an overhanging wisteria vine protects them from the less driving rains. So far the percentage of loss has been low. Some shade is enough for the smaller types of southwesterns when growing wild so I do not feel concerned by some shade for mine. Plenty of pulverized limestone,old plaster or bone meal with loose gravelly soil with leaf mold and good garden soil suits most of the natives. The hardy Opuntia compressa and its various varieties like limestone soils with sunshine most of the day. Mine do not do as well as they used to do—more shade from trees that have grown up since they were planted. Heavier soils through washing away of finer soils—and flooding by raised ground levels about them. Yes, I know the reasons why my plants do not do as wcll as they used to do, but I'm not so sure I'll change them. If a plant is not doing well, one should ask, "What have I done or not done recently to this plant." Conditions change even yearly.

I'm very much satisfied with the powdered soft brick and brick rubble (size of peas) mixed with soil as a good drainage medium. The southwesterns have grown well in this the last three years that were sent to me by Mr. Slaughter (G. C.) Mission, Texas. The brick dust and rubble hold moisture, but do not get "spongey wet" like peat moss. Most of my plants were and have been "under-age" when I got them, so I have always been anxious for the best published methods to grow them. In 1928-1930 this was impossible. One of the books mentioned in my January-February article mentioned "Cactus Culture" by William Watson, Fifth Edition, 1920. I had a local book seller get it for me from England in 1930. (I had to rebuild it within two years.) On pages 6 and 7 under soil, I found "Therefore in preparing soil for them (cacti), a good loam with plenty of grass fibre in it, should form the principal ingredient, sand and small brick rubble being added—one part of each of the latter to six parts of the former. The brick rubble should be broken to the size of peas and hazel nuts. Lime and brick rubble." Although I never go out 100% for any one method, I do like brick rubble.

The article by Dr. Frank Buxbaum, Pg. 30, Cactus and Succulent Journal of America, Volume XXIV, No. 1, January and February "Raising Seedlings" using brick-dust-sand sounds "fool-proof" to me. A sterile medium free from Algae, fungus, weeds, etc., is a contribution to us cactophiles. At present I either sterilize my soils or use formaldehyde solution. To prevent damping off I use gravel (wheat size) to sprinkle over the treated soil after the seeds are planted. Under heat is not an absolute necessity unless the seed bed is planted in winter or late fall.

The use of ⅓ to ½ of old plaster rubbish for the lime loving types in addition to the good garden soil is an absolute necessity for rainy summers which leach out the neutral elements more rapidly than the acid forming. Borax waterings help to keep the "super-dry" ones in health and helps to keep the spines brillianlty colored. Double potting with an "insulator" of sand between protects the roots from rapid drying and temperature changes while absorbing the excess moisture.

The growth cycle of most of my cacti and other succulents is always of interest to correspondents and visitors. I've kept accurate written daily records for 19 years and intermittent ones previous to that. The growth cycle for certain types barring "temperature accidents," watering mistakes, etc., is usually constant for the given speceis of cacti or other succulents.

Heavy watering may move the growth cycle ahead by a few days to a month or more. The length of day seems to have considerable to do with the growth cycle. I have extended the day light through artificial means for two hours in the morning and 2 hours in the evening. The watering was kept to a minimum. Several Kalanchoes which usually bloom in February-April begun blooming in December. *Rebutia minuscula* and *R. violaciflora* bloomed in January although they usually wait until March or April. The greenhouse was 45° to 55°. The only objection I have to out of season growth is the white—colorless—stringy to misshapen growth.

My Epiphytes begin blooming in September and finish the next June (Rhipsalis, Zygocactus, Christmas Cactus, Aporocactus, Nopalxochia, Schlumbergera, Pseudorhipsalis, Disocactus, Chiapasia, and Epiphyllums). These get air and light from the sides. While a maple shades them from all but the late afternoon sunlight. The growth cycle for these has begun and will continue until mid-August (slow down from heat which accelerates in late September and October). At this time the late Epiphyllums, Zygocactus and early Rhipsalis will be budding and will be ready to bloom within a month or two. This corresponds to spring below the equator.

Plants that do not start growth in my collection by mid-June are usually sick from "too rich a soil," "too limey a soil, " "too acid a soil" and just a poor speciman. This last I've found is not alone in the succulent family. Poor root systems, poor parentage of hybrids, lack of warmth or coolness, lack of light or too much light and so on are other causes of losses. However, there are plants such as the *Carnegiea gigantea* that just will not conform to the domination of man for any great length of time.

Last summer I was asked to visit a native Ohioan trailerite back from California whose son had collected Opuntias, Echinocereii, etc., during their travels. The Echinocereus triglochidiatus had had 25 blooms on 6 heads while the rest were growing fine. They have again hit the trail as I cannot locate them now. I was interested in finding out if the same plants would bloom again here where the sunshine is 120 days.

To be continued

FIG. 80. *Lobivia rubescens.*

"SO YA WANNA GROW CACTUS"

By WM. MASTRANGEL, *Rocking Horse Cactus Gardens*

Part V

WHERE TO OBTAIN THE BEST CACTI

Assuming that we have a good idea how to grow, water and feed our cacti, there now appears before us the slight problem of obtaining more cacti to add to our little collection.

This brings us to an experimental stage where we test certain genera and species for hardiness. By this I mean, plants which do very well in California, will make very little progress in Montana, Arizona, or in a Chicago apartment. There are a number of cacti that will do well in

FIG. 81. *Echinopsis multiplex* is one of the "old reliables."

almost any clime; others do well only in dry climates; still others must have damp atmosphere; and many of us are familiar with certain desert cacti which, while hardy enough, require excessive amounts of sunshine to produce flowers.

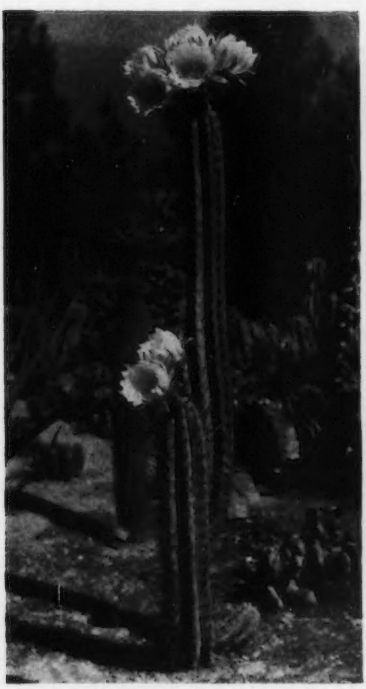
The following genera are, over all, the hardiest and best growing cacti for collectors:

Echinopsis—(Easter Lilies)
Lobivia—(Cob Cacti)
Notocactus—(Ball Cacti)
Gymnocalycium—(Chin Cacti)
Trichocereus—(Torch Cacti)

The above named are almost fool-proof, requiring but ordinary care. Almost any soil suits them and they flower well in medium to strong sun. They are suitable for indoor or outdoor culture. We raise the above named cacti in our own gardens, in open lath the year around—and all of them have taken winter temperature down to 20 degrees above zero without harm.

For the specialist it might be interesting to note that there are over seventy-five species of Lobivia alone. (Lobivia is very closely allied to Echinopsis.) Both Echinopsis and Lobivias are free flowering. Echinopsis has large lily-like flowers which are among the most beautiful of all cactus flowers while Lobivias have smaller and brighter flowers. Notocactus is a fascinating genus which has some twenty odd species—the most beautiful being, *Notocactus Leninghausii*. The smaller *Gymnocalycium* (chin cactus) are simply fascinating—flowers ranging from pure white, chartreuse to deep rose. Trichocereus are taller growing, showing their large flowers when older.

The next hardiest cacti are the familiar Mammillarias (strawberry cactus or pin cushions) and Echinocereus (Hedgehog). It is best for most beginners to keep away from soft Mams. such as *M. bocasana, M. plumosa,* etc. There are hundreds of Mams. to choose from which are hardy in about any part of the country; a few examples are *M. Tetracantha, M. Heyderi, M. Durispina, M. Candida, M. Compressa,* etc. Like-wise, the mountain hedgehogs, are the hardiest in their group, i.e.—*Echinocereus Bonkerae, Ech. Fendleri, Ech. Viridiflorus, Ech. Coccineus,* etc. The last named hedgehogs comes from the higher, cooler mountain areas. There are many other species of cacti, individuals that are wonderful growers. Some of which are the Twisted-rib cactus, Lace cactus, Epithelantha, the Peanut cactus, many of the Ferocacti (Barrels), many Coryphanthas, larger specimens of Astrophytums, etc. The above list is a good starting point for the amateur collector who wants to get by with the least possible loss.



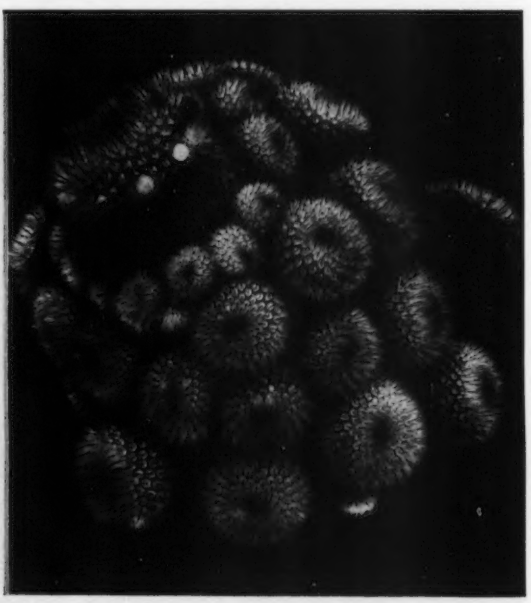


FIG. 82. (*Left*) *Trichocereus macragonus.* FIG. 83 (*Right*) Grafted plant of *Notocactus ottonis.*

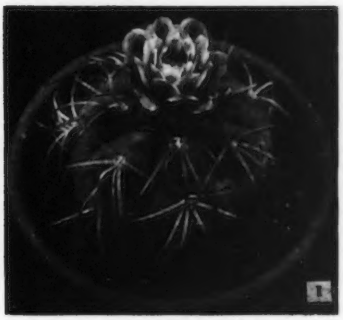


FIG. 84. *Gymnocalycium loricatum.*

Now the all important question comes up—"Where can I get good healthy cacti for my collection?" Well, usually the starting point is a gift box collection of cactus; these gift boxes have started off many an amateur and while the price paid for them does not warrant the best quality, yet many a person has been made happy by watching a few of these common plants grow and flower. Next, one finds himself trading plants with another collector, or receiving a few cacti as gifts from another enthusiast. However, most amateurs find their biggest selections in florists or nursery shops, most of whom generally keep on hand a few hundred odd cacti and other succulents for their trade. One will find that very few of these plants are given a name—which is one of the most important things for a collector to know. Whether scientific and common names on the plants, half of the fun of collecting is lost. The three best ways to obtain cacti are:

1. From a reliable commercial cactus garden —which specializes in the growing and selling of cacti and other succulents. Plants bought from these establishments will be properly labeled.

2. By importing from foreign countries such as Mexico or Argentina. This method, however, requires more time, expense, and red tape. One must request U.S. Dept. of Agri. plant tags from Hoboken, New Jersey, then send the plant tag together with remittance in U.S. dollars by foreign bank draft to the foreign cactus garden, and after waiting several months you must pay duty on the plants and shipping charges from the U.S. port of entry to your home. Generally the plants thus received have been so long in transit that one can expect several losses.

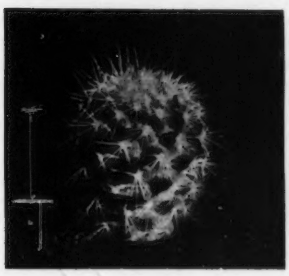
3. By collecting in the field. This involves long automobile trips and hikes over rough terrain. The best field collecting areas are in the states of California, Arizona, New Mexico, Texas, Nevada, Utah, and Colorado. One will find that though these states, being generally over-run with the usual undesirable prickly pears and chollas, are generally scarce in the much desired pin cushions and hedgehog types. Before collecting, therefore, it is best to get the advice of someone who knows where to find the desired plants. This will save a lot of unnecessary wandering. Then too, it is advisable to find out about state laws regarding the collecting of wild plants—as some states have restrictions, and others have restricted localities. It is not worth a $300.00 fine to collect a $1.00 plant.

Most commercial cactus gardens have such a wonderful variety of cacti to offer, that building a collection is a pleasure. Many of these cactus gardens have elaborate retail catalogues and every cactus garden generally has plants which the other ones do not have. It is very possible for one to be able to build up a fine collection of from 500 to 800 different species—merely by ordering from various cactus catalogues. It is wise to remember to buy the best; there are no bargains. A cheap, quickly grown cactus never brings the satisfaction that a slowly grown, adult flowering plant can bring.

No collector, however, should miss the fun of hiking a few miles into the desert mountains of the southwest, and gain the pleasure of finding a wild cactus for his or her collection.

Next issue—"The beautiful Arizona Rainbow cactus."

FIG. 85. Mammillarias, Astrophytums and the Peanut Cactus (*Chamaecereus silvestri*) are popular plants for beginners.



Mystery of the Christmas Cactus

By MRS. CACTUS PETE

The old-fashioned "Christmas Cactus" as we know it, is a plant whose history seems to be veiled in mystery. Botanists, today, recognize it as a *Zygocactus,* or more likely, a hybrid of the *Zygocactus.* Where it came from no one knows for sure, as all records of this exact plant seem to be lost completely. There appears to be no trace of it in any of the early cactus literature. No one knows how or when it came to America.

It is often spoken of as *Zygocactus truncatus* but the true *Z. truncatus* has been in cultivation in Europe since 1818. At that time it was called *Epiphyllum truncatum.* It was not until as late as 1913 that it was definitely determined to be a separate genus of plants and was given its name of *Zygocactus.*

In May of 1837, George Gardner, according to his account in "Travels in Brazil"—published in 1846, was searching for new botanical specimens in the north eastern provinces back of the "bulge" in Brazil, in the Organ Mountains, approximately 60 miles north of Rio de Janeiro. Cutting through bamboo underbrush and trampling down ferns and Begonias, where the tree trunks were covered with Bromeliads, Orchids, ferns and climbing Begonias, he occasionally found large plants of *Zygocactus truncatus* (which he called *Epiphyllum truncatum*). These were hanging from rocks or tree trunks and were covered with "pink" flowers. He noted that these plants were always confined to the dense virgin forest, below 4,500 feet, whereas above that elevation he found a similar, more beautiful plant, which he named *Schlumbergera Russelliana.* This plant grew in more open and cooler regions.

He made many excursions in various directions and, during these trips, collected plenty of *S. Russelliana,* which he sent to England, where it was quite extensively propagated.

He notes that the winter months of May and June, corresponding to our November and December, were sometimes as cold as 32 degrees. The lowest temperature he observed was on May 26th at 8:00 a.m. when it fell to 39 degrees. The highest temperature during his six month stay in the Organ Mountains was on February 23 when the mercury stood at 84 degrees at noon. The hot season, January and February (corresponding to our summer) was also the season of almost daily rains and violent thunder storms which came with a great regularity about 4 p.m. and soon passed, leaving delightfully cool evenings.

The plant which George Gardner found, the true *Z. truncatus,* was not the one we call "Christmas Cactus," for all of the early descriptions and illustrations of that plant show plant growth having stem sections, often called "leaves," which were in reality short joints, each ending with a very distinct pair of long, tooth-like points which gave the appearance of crab-claws, from whence came the popular name of "Crab Cactus." Its flowers were also much more zygomorphic.

In America, *Schlumbergera Russelliana,* described as having a reddish purple flower, has also been lost, seemingly leaving no traces. There are those who sincerely believe that our so-called "Christmas Cactus" is the same plant which Gardner found growing at the higher elevation, but, unless there are still plants of it in cultivation in England, or until some new explorer brings back plants collected from the wild, no one can be sure. However, we do know that our "Christmas Cactus" could not be a true *Schlumbergera* according to that genus as it is now established, for in order to be a *Schlumbergera,* the plant must have an open, many petaled, star-form flower. If our "Christmas Cactus" is the plant found in the upper regions of the Organ Mountains, then it may be that it has been placed with the wrong group of plants. Botany was Gardner's "business" and he states that at first he thought this plant to be a *Zygocactus,* but upon closer examination he decided that it was not.

After the original *Z. truncatus* was introduced in Europe, many beautiful hybrids were developed. These found their way to the European and English markets. There is no complete record of the number or names of these new varieties. In 1907 Schelle in *Kakteenk.* listed 50 forms of the original *Z truncatus.* Franz de Laet of Antwerp, Belgium, listed 33 distinct kinds, hybrids of the original *Zygocactus.* That was in 1925, and many others are mentioned in cactus literature, but unfortunatley only a few found their way to cultivation in America.

At one time there were several private collections being grown in California, but the "Great Freeze" seems to have destroyed all of them, leaving only a few plants of a few varieties in the hands of nurserymen. These were slowly re-propagated. Everywhere we find our old favorite, the well-known "Christmas Cactus," and by diligent searching, several other fine varieties may be found.

Since each of the hybrids has a slightly different blooming period, they are all in great demand. The "Thanksgiving Cactus" *Z truncatus-rushi,* sometimes called "Bi-color," with its cerise and white flowers, seems to be the most similar to the original *Z. truncatus,* and indeed, could possibly be the same. This, as the name indicates, blooms for Thanksgiving. It is the earliest to bloom. Then comes the "New Year's Cactus" (*Z. salmonium*) with its beautiful salmon flowers, followed by the plant we know best as "Christmas Cactus." Occasionally the lucky collector may find someone who will spare a cutting of the rare *Z. delicatus,* white with a pinkish glow, or of *Z. violaceum,* a lovely purple.

In the spring, one may have the "Easter Cactus" *Schlumbergera Bridgesii,* with its hairy joints and masses of crimson flowers, or *S. gaertneri* (known also as *S. makoyanum*) which has smaller red flowers, but also blooms for Easter. These will have the typical star-shape flower of the true *Schlumbergera.*

After reviewing all literature we have available on the subject, we conclude that our "Christmas Cactus" is most likely to be one of the early hybrids, introduced by early colonists, either to the New England States or to Canada, where it is still the householder's most cherished plant, and where we still hear of single plants which are claimed to be 50 to 60 years old, produced from slips taken from "Grandmother's Plant" which claimed an equal age.

Yet we must admit our beloved "Christmas Cactus" could be that plant found high in the Organ Mountains. "Contributions from the U. S. National Herbarium," Vol. 16, Part 9, 1913, shows an illustration* of *S. Russelliana* which certainly seems to be our old familiar favorite; this cannot be a *Schlumbergera* because of its flower shape. If this is proved correct then the plant may be found to be an un-named species of *Zygocactus.* We still wonder "Who will solve the mystery of our old-fashioned "Christmas Cactus?"

*See illustration in *The Epiphyllum Handbook*—Haselton, pg. 120.

SPINE CHATS

LADISLAUS CUTAK

According to Richard A. Howard, the Grenadine Islands have remained for many years a gap in the knowledge of the flora of the Caribbean area. This group of small islands is located between St. Vincent and Grenada in the Lesser Antilles. Howard proposed a survey trip in 1950 and then carried out extensive collecting in eighteen islands in the Grenadine chain. In area the islands of the Grenadines represent about 50 squire miles of land surface. The largest island is Carriacou with approximately 13 square miles. The Islands represent the exposed summits of peaks on a single narrow bank of submerged volcanic mountains. If the current sea level were lowered 125 feet all of the Grenadines between Bequia and Carriacou would be united. The seacoast area of the Isle of Ronde is open rocks and boulders covered with *Cactus Broadwayi* and *Agave caribaeicola*. Above the cliff face area and the park-like zone is an extensive development of *Opuntia Dillenii* which apparently has grown tall and rotted out at the base, collapsing in a spiny, almost impenetrable zone among boulders. *Pedilanthus tithymaloides* grows among the plants of Opuntia, adding color to the gray-green of the cactus stems. Diamond Head or Kick 'Em Jenny is a pile of boulders about 670 feet high and perhaps a quarter of a mile in diameter. It is uninhabited, except on occasions when natives search for birds' nests and eggs or hunt the wild goats and chickens which abound on the island. The middle areas of Kick 'Em Jenny, particularly on the western side, abound with *Cephalocereus nobilis*. Rock faces support *Hylocereus trigonus* and *Cactus Broadwayi* in scattered numbers inhabit the wave-cut cliff faces. Large Island, about one-half mile square,was largely cultivated in former times but at present the cultivated fields have been taken over by lush growths of *Opuntia Dillenii* and *Cnidoscolus urens*. Nowhere else in the Grenadines were such formidable stands of Opuntia encountered. Immediately around several of the ruins of old buildings there are extensive growths of *Aloe vera,* an escape and remnant of former cultivation. *Cactus Broadwayi* also occurs on the coastal edges, while *Cephalocereus nobilis* is very abundant in restricted areas in the wooded formation. *Cactus Broadwayi* is well represented in the Grenadines, being abundant in rocky areas usually on the windward sides of the islands. *Hylocereus trigonus* is by far the most abundant cactus in dry open woodlands, while *Opuntia Dillenii* is a common plant on the windward rocky slopes where dense stands four feet high occur. I found Richard A. Howard's 129-page treatist on "The Vegetation of the Grenadines, Windward Islands, British West Indies" in the Contributions from The Gray Herbarium of Harvard University No. 174 (issued June 30, 1952) extremely interesting.

* * *

Several new species of Cactus are published in the 23rd volume of Lilloa, official publication of the National University of Tucuman, Argentine. A. Castellanos describes *Gymnocalycium Ragonesei* and *Opuntia paediophila* from Argentine and M. Cardenas describes *Pereskia Diaz-Romeroana, Opuntia tayapayensis, O. chuquisacana. O. Alko-tuna* and *O. Posnanskyana* from Bolivia. The Bolivian cacti emanate from the central portion of that country while the Argentine ones grow in Salinas Grandes. The Pereskia is comparable to *P. Weberiana* but differs in being more branched with more spines in the areoles and bundles of hairs at the leaf bases while the flower buds are covered with long hairs and the flowers are violet red instead of white. *Opuntia tayapayensis* and *O. Alkotuna* are flat-jointed prickly pears, the former related to *O. depauperata* but distinguished from it by its longer and fewer spines in the areole, while the latter is not comparable to any other platyopuntia known in Bolivia. *O. chuquisacana* remotely resembles *O. teres* and *O. Posnanskyana* appears to be an intermediate form between a Tephrocactus and a Cylindropuntia. The Argentinian *O. paediophila* resembles *O. aoracantha* but its spines are not as robust nor black. *Gymnocalycium Ragonesei* is a small hemispherical plant with ten flattened ribs, whitish spines and red-tinted white blossoms.

* * *

Recently a friend histologist sent me several kodachromes depicting a very unusual cactus for identification. This tiny plant was found in Coahuila by a native mining prospector who had given a few plants to a lady operator of a hotel in one of the border towns. The diminutive cactus—only about an inch tall—immediately intrigued me because it appeared unlike any described member of the Cactaceae. My first thought was to secure a living plant or two to determine its relationship. After a brief correspondence, the lady hotel proprietor willingly parted with two of the precious plants. Flowers were desired but not obtainable due to the lateness in the season. The two plants arrived during one of the hottest periods experienced in weather history in the Midwest. The prescribed fumigation at the port of entry apparently softened the plants, so that one of them succumbed shortly after its arrival. The other is still hanging on as a grafted plant. Superficially, our enigmatic cactus resembles *Pelecyphora* (Thelocactus) *Valdeziana* but does not tally with the accompanying description of it. Our plant is neither a *Pelecyphora* nor a *Thelocactus;* in fact, it cannot be placed in any known genus to my knowledge. The cactus can best be described as a slenderly cylindric to globose plant with small terete tubercles with pinhead-size areoles filled with about a hundred very minute translucent spines, each spine bearing an 'umbrella' of 12-25 minute barbs at the tip, so that when viewed under a lens it presents a scintillating lacy pattern. No other cactus, to my knowledge, bears such spines. The flowers are axillary, pinkish, bell-shaped, and rather large for the plant. If arrangements can be made, a trip to Mexico will be necessary to locate more of these plants and if successful, a full report will appear in this JOURNAL. In all respects it is one of the tiniest and daintiest cacti in existence.

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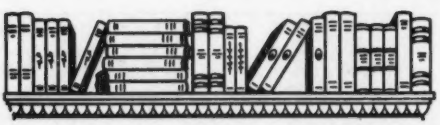

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